

Work Order ID 67617

Monday, March 28, 2011 3:02:07 PM

Page 1

Item ID: D205-596-105

Accept

Revision ID:

Item Name: Crosstube Fwd Extended

Start Date: 3/28/2011 Start Qty: 1.00

Required Date: 4/14/2011 Req'd Qty: 1.00

Reference:

Approvals:

Process Plan:

Date: 03.28

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Run

Start

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

Draw Nbr

Revision Nbr

D205-596

Rev B

100

0.00



DC

Document Control

DOCUMENT CONTROL

Memo

0.00

Photocopy D205-594 bluefile & type labels per PPP D205-596-105 CHG002

S ulocallp

HJ Per BG 11-6-16

110

0.00



CNC Bend 2

CNC Alpha 160 Bender

BENDING MACHINE - CROSSTUBES

Memo

0.00

Bend as per Dwg D2889 using CNC bender program

SAD

11-04-20

D

130

0.00



QC

Quality Control

QC15- Crosstube Dimensional Check

Memo

0.00

S ulocallp

H

B67617

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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Page 2

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Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

140

0.00



Crosstubes

Crosstubes

Memo

0.00

Crosstubes

1-Cut as per Dwg D205-596-105
2-Deburr & Inspect for surface damage. Polish cut surface. Scribe part # and batch # on one end of tube.

11-4-21

SAP 11-04-22 - ①

150

0.00



QC6- Inspect dimensions to drawing

QC

Memo

0.00

Quality Control

SAP 11-02-28 ①

160

0.00



Crosstubes Chemical Conversion

HandFXtube

Memo

0.00

Hand Finishing Crosstubes

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Page 3

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Item Name: Crosstube Fwd Extended

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Start Date: 3/28/2011 Start Qty: 1.00



Cust Item ID:

Required Date: 4/14/2011 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start



Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
170 SprayPaint Spray Painting	SprayPaint Memo 1-Prime inside and outside with Immron per QSI 005 4.2	0.00 0.00						25 11-05-06	
180 QC Quality Control	QC14- Inspect Spray Paint Memo	0.00 0.00						11 05 09 09	
190 Crosstubes Crosstubes	Crosstubes Memo 1- Lightly scuff the bonded area using a 320 grit sand paper and clean the area with 41058 wash 'n' wipe 2- Apply magnobond 6398 as per dwg D205-596-105 Magnobond 6398 Batch: 116677 3- Inst	0.00 0.00						11 06 08 01	

EXP: 08/2011

W/O: 67617		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector
11.06.09	190	No more MS21920-25 clamps, use alternative with accordance to w/o Dwg. MS21920-24 are too long B108258 X4 used MS21920-24.	W/N	11.06.09	1	N/A	Sublet
11.06.15	190	REMOVE / INSTALL SUPPORTS PER ATTACHED EMAIL				CP 11.06.15 B1042	

Part No: D205-596-105 PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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Stop

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Start Date: 3/28/2011 Start Qty: 1.00

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Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start

QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

200

QC5- Inspect part completeness to step on W/O

0.00



QC

Memo

0.00

Quality Control

S 1.06/16

POSITIVE RECALL

EFFECTIVE 11.06.15 AUTH UPRELEASED UP DATE 11.06.17

210

Packaging

0.00



Packaging

Memo

0.00

Packaging

Identify and pack for shipping as per PPP D205-596-105

Location:

PPP Rev: B

Rec'd 4/17 ①

220

QC21- Final Inspection - Work Order Release

0.00



QC

Memo

0.00

Quality Control

11/6/20 MF

11-06-17

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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Picklist Print

Monday, March 28, 2011 3:02:14 PM

Page 1

Work Order ID: 67617

Parent Item: D205-596-105

Parent Item Name: Crosstube Fwd Extended

Start Date: 3/28/2011

Required Date: 4/14/2011

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP Rev:D 05.03.21 Added bending procedure KJ/JLM
IPP Rev:E 08-01-10 ECN 1075 DD
IPP Rev F 08.04.28 Added bending & mat'l EC verified by: DD
IPP rev G 10.05.27 chg QC15 to QC6 EC verified by: DD

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
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D6005-180		Manufactured	No			110	Each	16.0000	1	1			
Crosstube Material													

Location	Loc Qty	Loc Code
LG	16	
39734	7	
59307	9	

D2893-1		Manufactured	No			190	Each	0.0000	2	2			
2.75 Support													

MS21920-25		Purchased	No			190	Each	26.0000	4	4			
Clamp(per MIL-DTL-8783C)													

MS21920-24 B108258

Location	Loc Qty	Loc Code
LG050	26	
116264	26	

D3595-063-450		Manufactured	No			190	Each	87.0000	4	4			
RUBBER CUSHION													

Location	Loc Qty	Loc Code
LG	66	
67353	66	
LG055	21	
67067	21	

B# 68893

① 11-4-20

ml 11.06.08

ml 11.06.09

ml 11.06.09

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Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

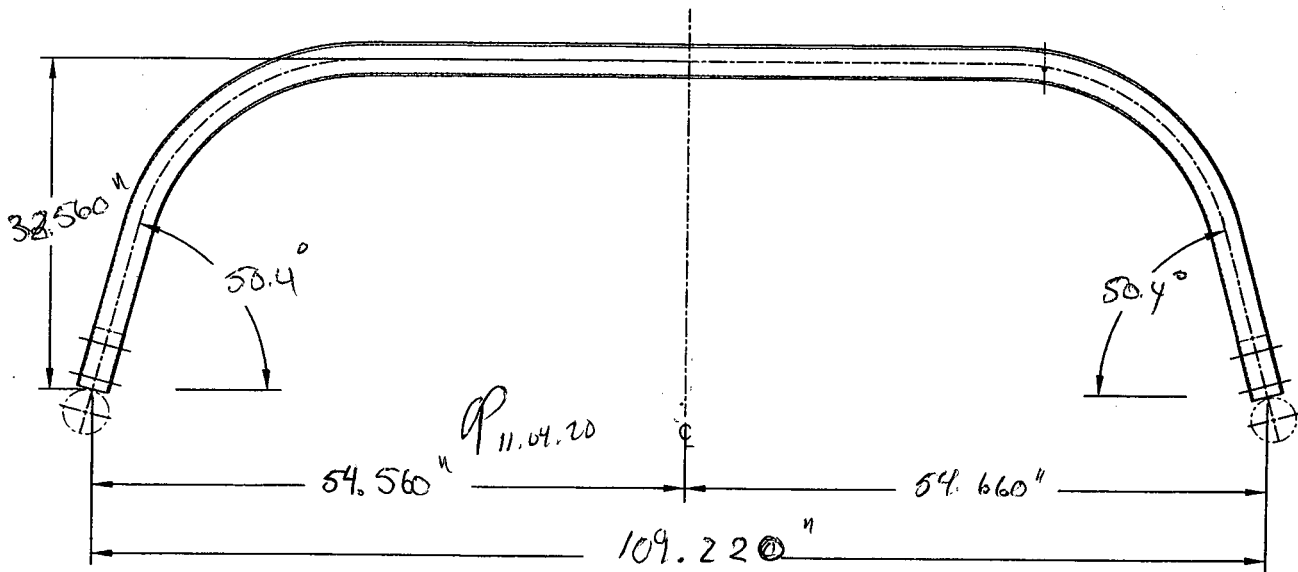
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DART AEROSPACE LTD		Work Order:	07617
Description: Crosstube High-High Fwd		Part Number:	D205-596-105
Inspection Dwg: D205-596-105 Rev: B		Page 1 of 1	

Required Dimension	Min	Max
Height	32.4	32.6
1/2 Span	54.6	54.8
Angle	49	52
Total Span	109.2	109.6



Comments
0.046" under tolerance for one width.
OK. P 11.04.20 QSI/RL

QC15 Inspection	P 11.04.20
Date	11/04/20

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	
B	08.04.21	Dwg Rev updated	KJ/JM	

W/O:		WORK ORDER CHANGES					
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PARTS LIST:

Qty	Part Number	Description
X	D205-596-105	CROSSTUBE ASSEMBLY, HI-HI FWD
1	D6005-180	CROSSTUBE
2	D2893-1	SUPPORT
4	D3595-063-450	RUBBER CUSHION
4	MS21920-25	CLAMP
A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

GENERAL NOTES:

- 1) MATERIAL: MANUFACTURE FROM D6005-180
FINISHED LENGTH = 134.40 ± 0.02
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART 005 4.2
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: N/A
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER AND BATCH NUMBER IN THIS AREA WITH
VIBRATING STYLUS
- 7) WEIGHT: 40 lbs
- 8) PART IS SYMMETRIC ABOUT CENTERLINE
- 9) BEND PROGRESSIVELY WITH A MINIMUM OF 3 PASSES. MAXIMUM TUBE FLATTENING DUE TO
BENDING IS 6% BASED ON O.D.
- 10) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE
OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS
SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT
LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 11) APPLY A 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2893-1 THAT
WILL BE IN CONTACT WITH THE CROSSTUBE. LET CURE FOR 12 HOURS AFTER INSTALLATION
AND PRIOR TO PACKAGING.
- 12) INSTALL MS21920-25 CLAMPS WITH D3595-063-450 RUBBER CUSHIONS TO SECURE D2893-1
SUPPORT ON THE TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE
CROSSTUBE SUPPORT.
NOTE: IT IS ACCEPTABLE TO SUBSTITUTE MS21920-25 CLAMPS WITH LONGER (MS21920-26) OR
SHORTER (MS21920-24) CLAMPS TO ACCOMMODATE VARYING DIAMETERS. ENSURE THERE IS A
MINIMUM OF 1.5 THREADS IN SAFETY ON THE NUTS.
- 13) TORQUE CLAMPS 80 TO 100 IN-LB

DEO ATTACHED**RELEASED**
06-01-14

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 47617

PS 11-03-25

B	SUPPORT NOW MAGNOBONDED; REMOVE D2856-600-851 ABRASION STRIP; UPDATED NOTES; ADDED D3595-063-450 CUSHION; MS21920-25 WAS MS21920-24	MB	07.12.03
A	NEW ISSUE	DS	02.11.20
REV.	DESCRIPTION	BY	DATE
DESIGN	<u>4</u>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	<u>J</u>		
CHECKED	<u>PH</u>	DRAWING NO.	REV. B
MFG. APPR.	<u>E</u>	D205-596-105	SHEET 1 OF 2
APPROVED	<u>H</u>	TITLE	SCALE
DE APPR.	<u>H</u>	CROSSTUBE ASSEMBLY, HI-HI FWD	NTS
DATE	07.12.03	COPYRIGHT © 2002 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

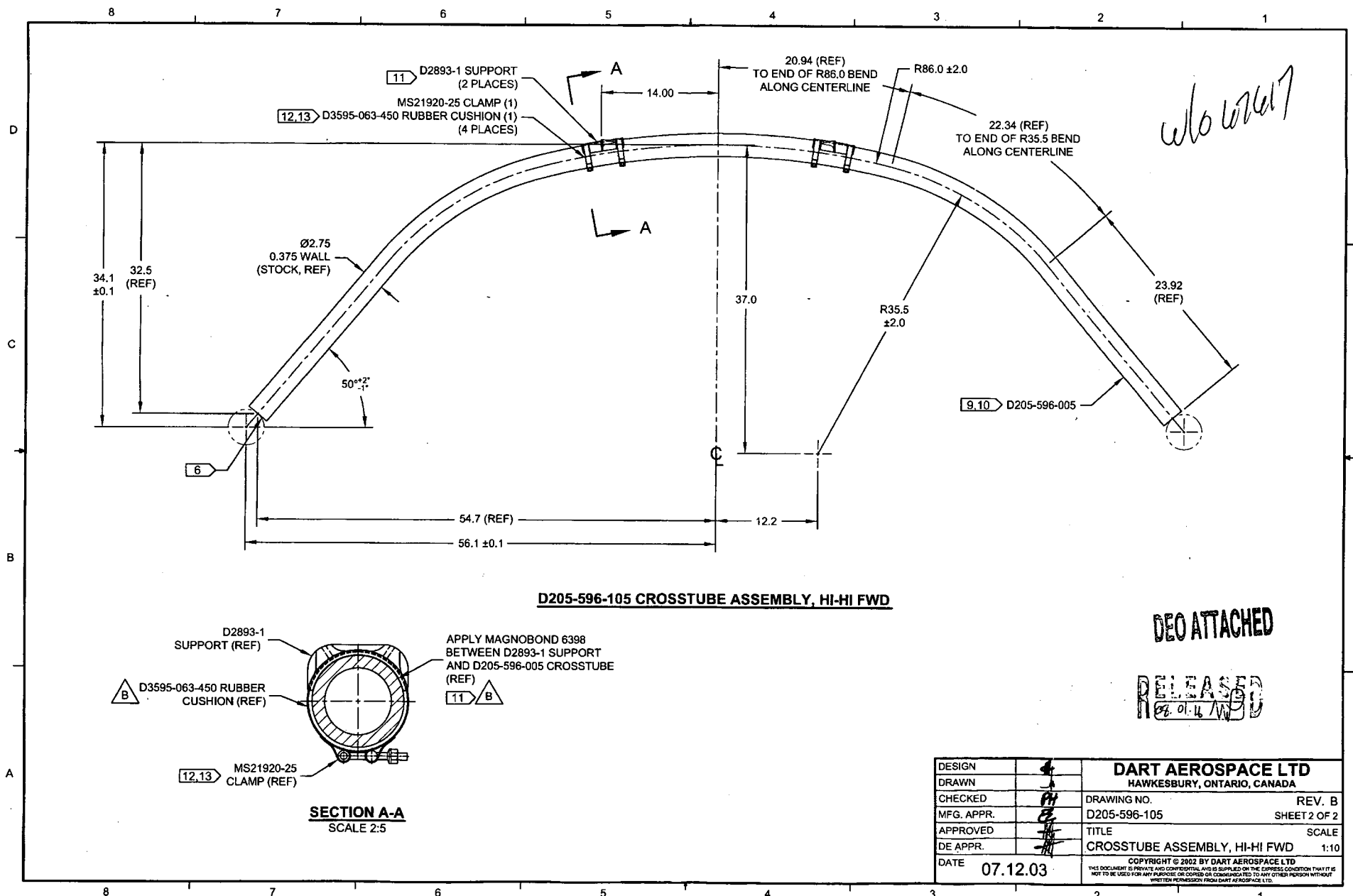
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DRAWING NO. D205-596-105	TITLE CROSSTUBE	REV. B	DART AEROSPACE LTD ENGINEERING ORDER		D.E.O. NO. D205-596-105-B-1	SHEET NO. SHEET 1 OF 1	SCALE NTS
DRAWN <i>UP</i>	CHECKED <i>PH</i>	MFG. APPR. <i>MM</i>	APPROVED <i>MD</i>		DE APPR. <i>th</i>		
DATE 09.05.01	DATE 09.06.15	DATE 09/06/22	DATE 09/06/22		DATE 09.6.22		

who 6/26/22

CHANGE:

ADD THE FOLLOWING CROSSTUBE ASSEMBLY:

Part Number	Description
D205-596-105B	CROSSTUBE ASSEMBLY (214 HI-HI FWD)

THE D205-596-105B CROSSTUBE HAS THE SAME PARTS LIST AS THE D205-596-105 CROSSTUBE. HOWEVER, INSTALL THE SUPPORTS AS SHOWN IN FIGURE 1 OF THIS ENGINEERING ORDER. THE NEW KIT IS OTHERWISE ASSEMBLED PER THE D205-596-105 CROSSTUBE.

RELEASED
09/06/22 MD

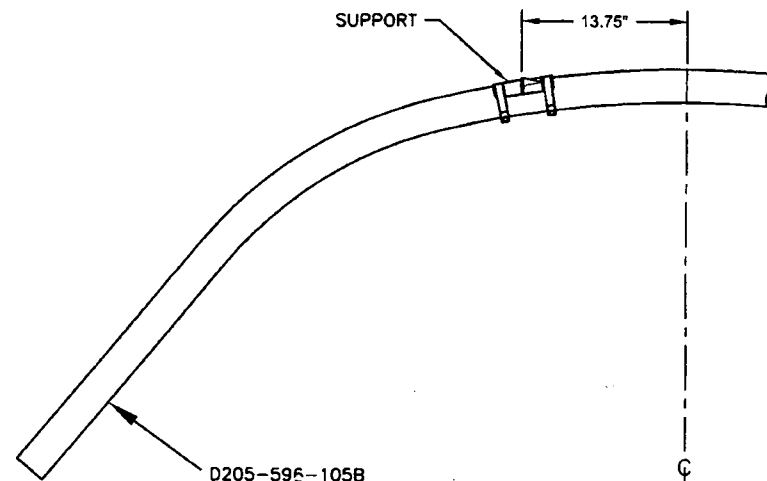


FIGURE 1 - SUPPORT INSTALLATION

W/O:		WORK ORDER CHANGES					
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Chris Provencal

From: David Shepherd <dshepherd@dartaero.com>
Sent: Tuesday, June 14, 2011 10:59 AM
To: 'Chris Provencal'
Cc: 'Mike Petsche'; 'Dan Stow'; 'Eric Downing'
Subject: RE: Procedure for installing supports.

Made a couple of small changes.

- ~~Remove finish on xtube in area of support down to alodine finish.~~ CP 11.06.15
- Touch up alodine on xtube in affected area ~~95~~ req'd
- Completely remove any finish on support, scuff bottom surface of support
- Apply a 0.04" – 0.07" layer of Proseal 890 class B-2 on bottom of support and install wet.
- Install clamps and torque per dwg
- Clean up excess proseal
- Touch up paint finish as req'd per QSI 005
- Let cure for 72 hours after installation, recheck torque.

David

From: Chris Provencal [mailto:cprovencal@dartaero.com]
Sent: Tuesday, June 14, 2011 8:08 AM
To: David Shepherd
Cc: Mike Petsche; 'Dan Stow'; Eric Downing
Subject: Procedure for installing supports.

David,

We have two 212 fwd crosstubes that they need to get ready. The proposed procedure for modifying the off-center supports

- Remove finish on xtube in area of support down to bare metal.
- Remove finish on underside of support, scuff bottom surface of support
- Touch up alodine on xtube in affected area
- Apply a 0.04" – 0.07" layer of Proseal 890 class B-2 on bottom of support and install wet.
- Install clamps and torque per dwg
- Clean up excess proseal
- Touch up paint finish as req'd per QSI 005
- Let cure for 72 hours after installation, recheck torque.

Is this acceptable?

-Chris